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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/709,513
Filing Date: May 11, 2004
Appellant(s): FROHLICH, KLAUS

Ms. Gudrun Huckett
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/11/2006 appealing from the Office action mailed 5/9/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Holdsworth in view of Michelson as applied to claims 1,2,5, and 7-9 above, and further in view of Ecklesdafer (US Patent 5,154,652)..

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,909,980	Holdsworth	6-1999
6,139,550	Michelson	10-2000
4,666,326	Hope	5-1987
5,974,761	Mochizuki et al	11-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holdsworth (US Patent 5,909,980) in view of Michelson (US Patent 6,139,550).

As to Claims 1-5, and 7. Holdsworth discloses a device for connecting bar ends, the device comprising:

a pipe section (112) for receiving bar ends of bars to be connected;

clamping elements (142) each having an outer thread;

wherein the pipe section has threaded bores (137) in which the clamping elements are secured by being screwed in; and

wherein the clamping elements are arranged in a first row having a first longitudinal axis (Fig 10);

However, Holdsworth does not disclose a second row having a second longitudinal axes on the same side of the pipe section relative to a circumference of the pipe section and being approximately parallel to the first row nor the clamping elements of the first row being positioned between two of the clamping elements of the second row in a staggered arrangement at an angle of less than or equal to 60 degrees relative to one another, specifically approximately 30 degrees.

Michelson teaches a plating system that permits a pair of screw fasteners to be inserted into a bone which are staggered [and]... the shafts of the two screw fasteners cross over in close proximity to each other and define an included angle between 25 and 90 degrees. Such a crossed configuration... provides an extremely stable engagement... as they are very close together and diagonally crossed" (Col 26, lines 66-67, Col 27, Lines 1-10; Also see Figs 96A-97C). Michelson is evidence of the recognition of those of ordinary skill in the art of providing staggered rows for a secure engagement of a cylindrical object per se. Duplicating the parts, in this case the rows of screws, is merely an engineering principle of providing multiple fasteners in a staggered second row without increasing the length of the connector, while increasing strength by

even distribution of the stress applied to the bar by the screw rows. Michelson is evidence of such an engineering principle. Accordingly, it would have been obvious to one of ordinary skill in the art to provide Holdsworth with the staggered arrangement of crossed screws as taught by Michelson to provide an extremely stable engagement of the screws to the bar by diagonally crossing the screws, providing multiple fasteners in a staggered second row without increasing the length of the connector, while increasing strength by even distribution of the stress applied to the bar by the screw rows.

As to Claim 8. Holdsworth discloses a transverse element (138), arranged at least approximately at a longitudinal center of the pipe section.

As to Claim 9. Holdsworth discloses that the transverse element projects diametrically through the pipe section and is a clamping pin or a groove pin (Fig 10).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Holdsworth in view of Michelson as applied to claims 1-5, and 7-9 above, and further in view of Hope (US Patent 4,666,326).

As to Claim 10. Holdsworth in view of Michelson the bar connection as claimed but do not disclose each section of the pipe section that receives a bar end having at least one clamping screw that, relative to the circumference of the pipe section, is positioned essentially opposite the clamping elements of the first and second rows.

Hope teaches a similar bar connection having each section of the pipe section that receives a bar end having at least one clamping screw (Fig 1) that, relative to the circumference of the pipe section, is positioned essentially opposite the clamping elements of the first and second rows because "the pair of screws provides a strong grip and ensures that the sleeve fitting is fixedly located relative to the reinforcing bars." (Col 3, Lines 55-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the bar connection of Holdsworth in view of Michelson to have a clamping screw positioned opposite the clamping elements of the first and second row as taught by Hope because the pair of screws provides a strong grip and ensures that the sleeve fitting is fixedly located relative to the reinforcing bars.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holdsworth in view of Michelson as applied to claims 1,2,5, and 7-9 above, and further in view of Mochizuki (US Patent 5,974,761).

As to Claim 11. Holdsworth in view of Michelson disclose the bar connection as claimed but do not disclose each section of the pipe section that receives a bar end having at least one transverse pin that extends at least approximately at a right angle to a longitudinal axis of the pipe section and is arranged in immediate vicinity of an inner pipe wall.

Mochizuki teaches a splice sleeve from reinforcing bars similar to the bar connection as disclosed having a taper pin and corresponding hole adaptable to be

used in conjunction with the sleeve of Holdsworth in view of Michelson and Ecklesdafer that is tangential to the reinforcing bar "to fasten the reinforcing bar to the supporting projections" (Col 2, Lines 45-49). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the sleeve of Holdsworth in view of Michelson and Ecklesdafer to have the hole and pin as taught by Mochizuki to fasten the reinforcing bar to the clamping projections (or screws, in this case).

As to Claim 12. Holdsworth in view of Michelson and Mochizuki disclose the at least one transverse pin is a groove pin or a clamping pin (33,34) and is comprised of hardened material.

(10) Response to Argument

As to Claim 1, Applicant argues:

> *"The reference does not generally teach, as suggested by the examiner, a recognition in the art that providing staggered rows will yield a secure attachment of a cylindrical object per se - the teaching to be derived is that screws penetrating into material in a crossed arrangement wedge material between them and provide a "claw" that tightly secures the plate to the cylindrical body... the connection in Michelson is achieved by attaching a plate by screws to bone in that the screws penetrate into the bone material and pull plate and bone tightly against one another. The present invention and Holdsworth deal with* ***clamping***

rods inside a sleeve – the sleeve is not to be tightly pulled against the rod"

(Pages 10-11)

Examiner respectfully disagrees. All of Holdsworth, Michelson, and the instant invention are structures for holding two objects tightly against one another. Holdsworth teaches the clamping of a rod within a sleeve, utilizing screws providing "a connection or coupling with a tensile strength higher than the tensile strength of the reinforcing bar or higher than the building code requirements to which the coupler is designed" (Col 2, Lines 65-67; Col 3, Lines 1-3). In applying the teachings of Michelson to Holdsworth, the staggered arrangement of angled screws provides the connection with "an extremely stable engagement" (Michelson: Col 27, Line 7), thus providing the existing high strength connection of Holdsworth with extreme stability. It emphasized that the Examiner is relying upon the teaching of the *arrangement* of staggered/ alternating holes and the application of angled forces via screws providing the secure engagement to apply to the Holdsworth reference, *not* the teaching of the screws penetrating the bar (bone). There is no illogical leap taken to create such a connection because Holdsworth already possesses the clamping arrangement and Michelson is relied upon merely for the teaching pertaining to staggering the arrangement of the screws.

As advanced in the rejection above, it is noted that duplicating the parts, in this case the rows of screws, is merely an engineering principle of providing multiple fasteners in a staggered second row without increasing the length of the connector

while concurrently increasing strength via even distribution of the stress applied to the bar by the screw rows. Michelson is evidence of such an engineering principle.

In addition, even if the screws were to penetrate the rebar (of which they do to a certain degree in both the instant invention (Fig 13) and in Holdsworth (Fig 4)), nothing within the instant claim language states that the connection is strictly limited to *external* clamping forces nor is there anything to preclude a pulling force to effect the clamping action.

As to Claim 2, applicant argues:

> *"The combination of Holdsworth and Michelson as proposed by the examiner especially cannot make obvious the invention as claimed in claim 2...The combination of Holdsworth and Michelson proposing two rows of screws... is not obvious because of the different types of connections that are proposed" (Page 12)*

Examiner respectfully disagrees. Examiner relies on the teachings of Michelson and Holdsworth to show that the screws operate in different directions on the bar ends in order to clamp two objects together. Figures 36 and 39A of Michelson are evidence of the screws acting on the bar in different directions, thus creating the extremely stable clamping arrangement that is taught by Holdsworth in view of Michelson.

As to Claim 3, Applicant argues:

> *"Michelson teaches that the screws should penetrate the material in a crossed arrangement in order to wedge material between the screws and provide a "claw" that traps the wedged material between the angled bone screws (see col. 20, lines 52-60, of Michelson). This does not teach that it is beneficial to arrange two rows of clamping elements at an angle of equal to or less than 60 degrees for clamping bar ends inside a pipe section." (Page 13)*

Examiner respectfully emphasizes that the Examiner is using the teaching of the *arrangement* of alternating holes and the application of angled forces via screws providing the secure engagement that the Examiner is applying to the Holdsworth reference, *not* the teaching of the screws penetrating the bar (bone). Figures 36 and 39A of Michelson show this angle being equal or less than 60 degrees.

As to Claim 5, Applicant argues:

> *"Michelson teaches screws that extend parallel and penetrate the bone material as shown in Figs. 96A-96C. However, as the teaching of Michelson concern the positive engagement of screws in bone material, this parallel arrangement cannot teach that the parallel displaced arrangement is beneficial for clamping elements acting on bar ends inside a pipe section." (Page 13)*

Examiner points out that Michelson, as admitted by Applicant, teaches the claimed structure. In order to establish a *prima facie* case of obviousness, it is only necessary for the examiner to present *evidence* preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art, or in the form of generally available knowledge, that one having ordinary skill in the art *would have been led* to combine the relevant teachings of the applied references in the proposed manner to arrive at the claimed invention, regardless if the motivation is not the same as the instant application.

As to Claim 10, Applicant argues:

> *"The teaching to be derived from this reference is a securing mechanism of two diametrically opposed screws but not a clamping screw to be arranged opposite first and second rows of clamping elements provided for a securing action, especially since the reference teaches in lines 58 to 68 of col. 3 that the arrangement of two opposed screws is not really beneficial and that a single screw in combination with opposed ribs etc. is much easier" (Page 14)*

Examiner points out that the motivation to combine the prior art is to "provide a strong grip and ensure that the sleeve fitting is fixedly located relative to the reinforcing bars" (Col 3, Lines 55-58). The connection of Holdsworth in view of Michelson is advanced and the strength increased by the inclusion of the opposing screw as taught by Hope. Nowhere in Hope is it stated that the arrangement of screws is not beneficial, but merely

that spaced ribs or nibs can replace the screws. In other words, the teaching of Hope that is relied upon in the rejection is that there is a third point of contact opposite of two spaced ribs or screws in order to enhance the connection of a rod inside a hollow cylinder.

As to Claim 6. Upon review of the rejection and in light of Applicant's comments, the interpretation of the claim by the Examiner was incorrect and therefore this rejection has been withdrawn.

As to Claims 11 and 12, Applicant argues:

> *"the bar 20 is either fastened by the bolt 7 or the pin 23 or the pin 32 (compare Figs. 3, 4, 10, 11). This can only suggest to a person skilled in the art to replace the screw pins 142 of Holdsworth with pin 23 or 32 as shown in Figs. 10 and 11 of Mochizuki. This teaching cannot suggest to use a transverse pin in addition to the two rows of clamping elements that are already provided." (Page 15)*

Examiner respectfully disagrees. Similar to the teaching of Hope, the teaching of Mochizuki that is relied upon is a point of contact (the taper pin) opposite of a steadying feature (screws or ribs; in this case, projections 25 or 31) in order to enhance the connection of a rod inside a hollow cylinder, *not* the teaching of replacing of the screws with the tapered pins.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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